

1. (Amended) A system for determining a structural condition of an item, comprising:

a piezoelectric sensor that is adapted to be supported on the item;

a resistive element coupled in series with the piezoelectric sensor;

a signal conditioner that conditions a signal including an indication of a voltage drop across the sensor;

a transmitter that transmits the processed signal; and

a remotely located interface that receives the transmitted signal and provides an output indicative of an impedance based upon the processed signal and the structural condition of the item.

7. (Amended) The system of claim 1, wherein the interface includes a portion that determines a mechanical impedance value based upon the processed signal and determines an indication of the structural condition from the impedance value.

10. (Amended) The system of claim 1, including a differentiating portion that differentiates an impedance value based upon the transmitted signal over time and wherein the interface synchronizes data acquisition from the transmitted signal with at least one selected value of the voltage generator.

16. (Amended) The method of claim 12, wherein step (D) includes determining an impedance value based upon the transmitted signal using the indication of the voltage drop and using the impedance value to determine the structural condition.

17. (Amended) The method of claim 12, including applying a voltage with a varying frequency across the resistive element and the sensor and differentiating an impedance value based upon the transmitted signal over time to thereby determine synchronization indicators and using the indicators to synchronize data acquisition from the transmitted signal with the varying voltage.

Please add the following new claims.

21. (New) The system of claim 1, wherein the resistive element is independent of the piezoelectric sensor.

22. (New) The system of claim 1, wherein the transmitter wirelessly transmits the processed signal.

23. (New) The method of claim 12, wherein the resistive element is independent of the piezoelectric sensor.

24. (New) The method of claim 12, wherein step (c) includes wirelessly transmitting the signal.